CSC 450/750 Assignment 1

Due date: Sep 19th, 2021 by 5:00 PM

Learning Objectives:

- Learn to use Node-RED, a tool that can be used to wire together services
- Learn to model and carry out workflows with a real life scenario.

Node-RED

Node-RED (https://nodered.org/) is a visual programming tool used to wire together hardware devices, APIs, and services primarily for IoT applications. For this project, we will use this tool to send messages between different entities.

Install Node-RED:

Install Node-RED to run locally: https://nodered.org/docs/getting-started/local
If you are using a Debian (even if it is not Raspberry Pi) or RPM based Linux, you can use the scripts available at the link.

Node-RED tutorial:

Follow these short tutorials to get familiar with Node-RED: https://nodered.org/docs/tutorials/
Specifically, we will use the Inject and Debug nodes to enact workflow and observe messages.

Scenario

Consider each entity with its duties/needs, and come up with a working workflow of a transaction on eBay.

- Buyer:
  - Submit order
  - Submit payment
  - Receive item
  - Submit review of the transaction
- eBay:
  - Receive order
  - Send payment to seller through PayPal with hold request, until the item is delivered
- PayPal:
  - Receive fund

- - ○ Hold fund until eBay confirms delivery
  - Merchant:
    - ○ Receives order details from eBay and payment notification from PayPal
    - ○ Send the item to the shipper for shipment
    - ○ Update shipping status
  - Shipping service
    - ○ Generate a label based on the information from the seller
    - ○ Pack and ship the item to the buyer
    - ○ Provide tracking information to both the buyer and seller

Evaluation:

- Being able to simulate a real life transaction without conflict between activities, from placing an order until a transaction has been completed.
- Each entity transmits a corresponding message based on its activity. E.g The buyer provides the item's name as a message of placing an order.
- Your workflow will be examined based on the message passing displayed in the debug section.
- Your workflow should provide multiple enactments, i.e. the order of the sequence of transactions should not be fixed but finding as many varieties of order between activities under constraints as possible.

Deliverables (Grading)

1. One or more JSON flow files that can be used to recreate the enactments. (60 points)
2. Enactments that your workflow can provide. (20 points)
3. A pdf file with the explanation of your workflow. (20 points)

Submission:

Please make sure to put all of your JSON files and pdf version of readme file in one zip file. The zip file should include your name and the abbreviation of assignment, e.g. Ezio-Mei-A1.zip. Submit this zip file by the due date on moodle.

Please use the message-board forum for this assignment to talk about general concerns and post questions about the tool and so forth. Please do not post any part of your answers publicly; instead, send questions specific to your approach via email. When you write to Ezio, cc Professor Singh so we can try to help where possible. (As usual, we will try not to provide you solutions but will guide you where we can).